



CORPORATE – POCATELLO OFFICE

August 11, 2015

Mary Kauffman
Caribou-Targhee National Forest
1405 Hollipark Dr.
Idaho Falls, Idaho 83401

**Subject: Biological Selenium Removal Treatment Technology
Fluidized Bed Bioreactor Pilot Study
July 2015 Progress Report**

Dear Mary,

This progress report summarizes key activities in July 2015 associated with the fluidized bed bioreactor (FBR) pilot study located near Hoopes Spring. This pilot study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in reducing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring. Operation and monitoring of the pilot study follows the *Pilot Study Work Plan and Sampling and Analysis Plan (Work Plan/SAP)*, *Biological Selenium Removal Treatment Technology Fluidized Bed Bioreactor* (prepared by Formation Environmental, dated September 2014, with revised text and tables dated March 5, 2015).

Activities at the treatability study pilot plant during July were primarily focused on restarting the system after the shutdown from April through June. The restart process was initiated in late June. Startup testing and adjustment lasted through most of July, with the system reaching steady state near the end of the month. Routine sampling, implemented under Addendum 01 of the Work Plan/SAP, commenced on July 21. Two weekly rounds of sampling were completed on July 21 and 28. No laboratory results had been received at the time of this report. After three weeks of operation, the FBR pilot system was shut down due to excessive headloss in the sand filter. Filamentous sulfide bacterial growth was identified in the aeration tank, which caused the excess pressure in the sand filter and necessitated shutdown.

Identification of Deliverables and Data Transmittals

Two rounds of analytical and field data were collected in July under the FBR Work Plan/SAP. As of this report none of the July laboratory data have been received (the most recent results prior to the shutdown were submitted with the April monthly report).

Final FBR Work Plan/SAP Addendum 01 was submitted to the Agencies on July 29, 2015. This submittal included revisions to address Agency comments (dated June 29, 2015) on the Draft submittal (dated May 29, 2015).

To support design of Phase II of the pilot study, a "pilot within a pilot" (ultrafiltration/reverse osmosis [UF/RO] and mini FBR units; skid-mounted) was proposed to the agencies. A Draft Work Plan/SAP for the Reverse Osmosis/Ultrafiltration and Biological Selenium Removal Fluidized Bed Bioreactor Pilot Study was submitted to the Agencies on July 8, 2015. Agency comments were provided on July 21, 2015 and following discussions to clarify a few items in the work plan, the draft work plan was conditionally approved for startup by USFS. The UF/RO+FBR skid-mounted pilot system was started on July 29, 2015. A Revised Draft UF/RO and FBR Work Plan/SAP is due to the Agencies by August 24, 2015.

Upcoming Activities

The following activities associated with the fluidized bed bioreactor pilot study are scheduled through September 2015:

- The plant is offline again due to filamentous sulfide bacterial growth identified in the aeration tank and causing excess pressure in the sand filter. A modification to the work plan to eliminate the sulfide bacteria is necessary. The FBR treatability study pilot system will be restarted upon discussion with the agencies and approval by USFS for the modification to the operation work plan.
- The UF/RO+FBR ("pilot within a pilot") Work Plan/SAP will be revised and submitted to the Agencies by August 24, 2015. The system skid-mounted pilot continues to operate and is being monitored according to the work plan.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,



Monty Johnson
Environmental Engineering Manager

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